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Language Shift among Adolescent Ethnic German Immigrants:
Predictors of Increasing Use of German over Time

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Abstract

This study examined language shift from speaking Russian to German longitudinally in a sample of 229 adolescent immigrants ($M_{age} = 16.14$, $M_{length\ of\ residence} = 6.26$, 67% female). Our aims were to test whether language shift can be found in adolescent first generation immigrants and to test whether variables indicative of (a) linguistic adaptability, i.e., the efficiency to learn, speak and use a second language, (b) the amount of contact with native Germans, and (c) the motivation to use German, predicted differences in adolescents' levels and rates of change in German language use. Results showed an overall decelerated increase in German language use over time, which resembled a "learning curve" leveling off at an average "frequent" use of German. Differences between adolescents in language shift were mainly associated with variables indicative of interethnic contact and motivation, but not to linguistic adaptability. In more detail, speaking German increasingly in daily life was related to an increasing share of native peers, a decreasing self-identification as Russian and an increasing orientation towards natives. Language shift thus seems to result from an increasing sense of belonging to the receiving society.

Keywords: second language use, language shift, ethnic Germans, adolescent immigrants, longitudinal, multilevel modeling

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1. Introduction

Language shift, which is defined as “the change from the habitual use of one language to that of another” (Weinreich, 1953, p. 68), is often regarded as a prerequisite for the integration of immigrants and as an indicator of adaptation (Remennick, 2004). The extent to which immigrants use their second language in daily life instead of their heritage language was found to be a predictor of immigrants’ adaptational outcomes such as self-esteem, earnings, or substance consumption and deviant behavior (Chiswick, 1998; Epstein, Margaret, & Botvin, 2003; McQueen, Getz, & Bray, 2003; Schnittker, 2002). However, surprisingly little is known about longitudinal change in second language use and its precursors (Clément, Baker, & MacIntyre, 2003). This secondary data analysis of a sample of adolescent ethnic German immigrants investigated change in second language use, or language shift, over four annual measurement occasions. We were especially interested in whether there is change in language use at all, which pattern language shift follows over time, and on which level this change takes place. Furthermore, we wanted to know which variables indicative of linguistic adaptability, contact, or motivation predict differences in language shift between adolescents.

We focused on the time period of adolescence as this period is not only formative for adult years, but also seems a very sensitive time for change in second language use (Tseng & Fuligni, 2000). Especially for adolescent immigrants language is not only a means of communication, but also of expressing group affiliations. Language use thus can be assumed to be related to achieving developmental tasks in the new context, such as finding new friends and defining one’s identity (Caldas & Caron-Caldas, 2002). Further, our focus was on ethnic German immigrants (also called ‘Aussiedler’ or repatriates). With over 2.5 million immigrants since the breakup of the former Soviet Union (FSU) in 1989, ethnic Germans are

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the largest group of recent immigrants in Germany. Ethnic Germans are diaspora migrants to Germany from Eastern Europe and Russia, whose ancestors were invited centuries ago by authorities to settle in areas not yet reclaimed to help cultivate land or secure border lands (Dietz, 2006). Due to this history, they are regarded as Germans by the German law and receive full citizenship upon arrival as well as economic support. However, having lived for generations in territories of the FSU, and being separated from their German ties especially in times of the Cold War, they became more and more included in mainstream Russian culture. For example, they were prevented from speaking German in public in the 1950s and 1960s due to Soviet ideology. Thus, many lost fluency in German. Especially the young generation grew up speaking only Russian (Dietz, 2006), because marriages between ethnic Germans and native Russians became common (Dietz, 2006), which made it difficult to keep German as a family language. For these reasons, although being of German ancestry, most ethnic German immigrants did not speak German when they entered Germany. Apart from their privileged status, ethnic German migrants face similar challenges as other migrant groups, such as problems with the transferability of their, often quite high, Russian educational qualifications (Konietzka & Kreyenfeld, 2001), their less favorable economic situation, and they often have only contact to other ethnic German immigrants from the FSU (Dietz, 1999a).

1.1 Change in Second Language Use (Language Shift)

Language shift is usually assumed to be a process covering decades or involving different generations. Veltman's (1983) classical concept of language shift as a process covering three generations suggests that first generation immigrants predominantly maintain their mother tongue, the second generation speaks both languages, and the third generation almost exclusively uses the second language. Although Veltman's (1983) concept assumes

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that change in second language use takes place between generations, there are theoretical and empirical arguments to assume that change happens in a single migrant generation (Jia & Aaronson, 2003; Pease-Alvarez, 2002).

Culture learning and culture shedding theories (Berry, 2005; Masgoret & Ward, 2006) may help to explain change in language use within one generation, as they focus on explaining individuals' behaviors over time in the new country. According to these models, changes in skills and behaviors follow a "learning curve" pattern, i.e., increase over time and level off as new culture-specific skills and behaviors are acquired (Ward, 1996; 2001). Older skills and behaviors that are not needed anymore are shed in favor of new skills and behaviors which allow individuals to better fit with the society of settlement (Berry, 2005). Although such a pattern is typically expected for skills, in the acculturation context it also seems to apply to behavioral changes which aim at increasing the fit between individual and society. For example, Titzmann and Silbereisen (2009) found that increases in the share of natives in adolescent immigrants' social networks are more pronounced early after immigration than later on. Most likely, this is due to the fact that newcomer immigrants need to reach a level of sociocultural adaptation that allows them to participate both in the home and the host society to a degree they deem sufficient and after which only smaller changes can be observed (Masgoret & Ward, 2006).

We base our hypotheses on both these theoretical underpinnings. According to culture learning and shedding theories we expect that second language use increases over time but that changes are more pronounced earlier than later ("learning curve" or "decelerated increase"). Furthermore, we do not assume a full adaptation over time for the first generation adolescent immigrants examined in this study. As first generation immigrants, our

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participants should on average predominantly maintain their mother tongue, as is expected by the three generation model (Veltman, 1983). However, as young immigrants with average lengths of stay of several years, we expect language shift to level off at a frequent use of German.

Hypothesis 1. Increase in second language use as a behavior is expected to show decelerated increase, meaning that change is more pronounced earlier, eventually flattening out over time.

1.2 Theories of Second Language Acquisition and Language Shift

As there is no specific theory which predicts first generation immigrants' language shift, we base our expectations on theories on second language acquisition but combine these with acculturation theories on immigrants' sociocultural adaptation. There are several theories on second language acquisition, reaching from a micro-perspective of acquiring the grammar, vocabulary, pronunciation, and other functional aspects of a second language, typically covered by psycholinguists (cf. Mitchell & Myles, 2004), to a ethnolinguistic macro-perspective of group differences in language use (e.g., Landry & Allard, 1994). There are also several social psychological approaches to second language acquisition, however, they were only seldom applied to immigrants (Masgoret & Gardner, 1999). Probably the best known of these models is Gardner's (1985) socio-educational model, according to which "it is hypothesized that individual differences in ability (both intelligence and language aptitude) and motivation account for differences in how successful students are in acquiring a second language" (Gardner, 2006, p. 244). Although this model was designed for examining second language achievement in the classroom context, some aspects are also relevant for the more informal language acquisition of immigrants, especially the aspect that a second language

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learner's level of motivation is based on different reasons, amongst which the desire to learn a second language in order to meet and communicate with members of the other group is particularly important (Masgoret & Gardner, 1999).

MacIntyre & Charos (1996) examined second language use outside the classroom in a bilingual Canadian community, combining Gardner's socio-educational model with the pyramid model of willingness to communicate (MacIntyre, 2007; MacIntyre, Clément, Dörnyei, & Noels, 1998), a model that directly aims at second language use. According to this heuristic model, willingness to communicate, which is defined as the intention to speak given the opportunity, is influenced by various factors ranging from more distant ones, such as intergroup climate and the speaker's personality, to situated antecedents, such as the desire to communicate with a specific person in a particular situation. In their final path model, MacIntyre & Charos (1996) found that frequency of communication in the second language was not only predicted by motivation, as was expected from the socio-educational model, and willingness to communicate, but that there also were direct paths from perceived competence, and exposure to second language speakers. This parallels economic and sociological research on immigrants' second language acquisition in terms of proficiency and use, which assumes that opportunities for contact with the new language and its speakers are as relevant as the efficiency to learn and speak a new language and the incentives to use it (e.g., Chiswick, 1998; van Tubergen & Kalmijn, 2005). Also acculturation theories, which directly aim to predict changes in skills and behaviors in immigrants, name three groups of predictors, which are, cultural knowledge, degree of contact, and positive inter-group attitudes (Berry, 2006, p. 53).

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The aim of this study was not to test any of the aforementioned theories, but to use them to guide our research with regard to potential predictors of language shift among adolescent immigrants. Although in these different areas of research predictors received various labels and were conceptualized slightly differently, we noticed that as an organizational framework three groups of predictors can be derived which we will refer to as (a) linguistic adaptability, (b) contact, and (c) motivation.

1.3 Predictors of Language Shift

Variables related to linguistic adaptability. We use the term linguistic adaptability to refer to variables related to the efficiency to learn and speak a new language, perceived competence, and cultural/linguistic knowledge. We examined perceived hassles with speaking the second language as one indicator of linguistic adaptability. Based on the willingness to communicate model, we assume that “the speaker’s self-perception of competence is considered more relevant than objective measures of linguistic skills” (Clément, Noels, & MacIntyre, 2007, p. 61). The language problems a second language learner experiences should thus reflect his self-perception of competence. A second, rather indirect indicator for linguistic adaptability used in this study was parental education. The educational level is not only a common proxy for socioeconomic status but also a reflection of the capability to speak a second language (e.g., Hakuta & D’Andrea, 1992). Higher educational qualifications of parents relate to higher cognitive abilities (Neiss & Rowe, 2000), and are associated with a more stimulating home environment, and more learning activities for the child (Myrberg & Rosén, 2008). Thus, higher parental educational levels can accelerate the process of second language acquisition (Chiswick, 1998; Hakuta, Butler, & Witt, 2000).

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Variables related to contact. Contact refers to the amount and intensity of time spent interacting with speakers of the home and host society, which also influences the opportunities for speaking the second language. In this study, contact was examined on two different levels. First, by the ethnic composition of the neighborhood, which affects the possibilities of maintaining the first language (e.g., Chiswick, 1998; Stevens, 1992). The more the speakers of a first language live in close proximity to one another, the greater the likelihood of their not using the second language and creating an environment conducive to maintaining the first language (MacIntyre & Charos, 1996; Mesch, 2003). Another measure of contact concerned direct interactions between immigrants and natives. As natives usually do not speak the immigrants' first language, immigrants need to use the second language in those encounters. In particular, using the second language with native friends should ultimately transfer to other situations as the use of the second language becomes habitual (Caldas & Caron-Caldas, 2002) especially in adolescence, when peers exert a major influence on behavior (Vandell, 2000).

Variables related to motivation. According to Gardner (2006), motivation is "a very complex phenomenon with many facets" (p.242). In this study, we cannot assess all the cognitive, affective and conative characteristics that are associated with being highly motivated. Instead, we investigated three reasons that might lie behind a strong motivation for speaking the second language, especially focusing on integrativeness and instrumentality (Gardner, 2006). The educational aspirations of the adolescents are considered to be an instrumental motivation (Grenier, 1984; Mesch, 2003), as they provide an incentive to use the second language in order to gain social or economic rewards, such as attaining a higher social status and higher earnings. In contrast, integrative motivational variables are characterized by

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positive attitudes towards the second language and its speakers and a desire to integrate into the receiving society (Gardner & Lambert, 1972). A higher self-identification with the culture of origin is expected to be related to less second language use, as adolescents who identify strongly with their culture of origin have to struggle more with inconsistencies in behavior and identity when using the second language in daily life, because people generally strive to keep identity and behavior congruent (Berzonsky, 1997). Another indicator for integrativeness in this study was the cultural orientation towards the receiving society, because immigrants who have positive attitudes towards the new country and its inhabitants can be expected to adopt behaviors of the new culture more readily, such as using its language (Schumann, 1986).

Although earlier research already provided some evidence for the association of some of these predictors and language use, variables of linguistic adaptability, motivation and contact were thus far hardly studied in combination. Furthermore, longitudinal studies on this subject are still scarce. Especially longitudinal analyses can challenge models with competing predictors, as not only a temporary state is assessed, where associations of variables might occur for all kinds of reasons, but change within persons in predictors as well as in second language use (Davies, 1994). Applying a developmental perspective and analyzing longitudinal data of quite a heterogeneous sample of adolescent immigrants, who were in Germany for a few months to over ten years at the first measurement occasion, we were able to test whether these groups of variables relate to both the level at the first measurement occasion and subsequent rate of change within individuals over time. It might be that different predictors can become more or less relevant at different phases in the process of acculturation (Beiser, Feng, Hyman, & Tousignant, 2002; Titzmann, Raabe, & Silbereisen, 2008). If a

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predictor variable was closely related to language shift over time, associations of both levels and rates of change should be found. If, however, a predictor variable was only related to language shift soon after migration, only associations of the levels at the first measurement occasion of our sample should be found. Accordingly, associations of only the rates of change would be indicative of the onset of a co-developmental process starting some years after migration. Furthermore, we wanted to examine whether each group of variables uniquely contributes to second language use. Knowing which groups of variables and, in more detail, which particular predictor variables, are connected to change in second language use will help to create parsimonious and tailored models for language shift.

Hypothesis 2. We expected that predictors of each of three groups of variables were related to immigrants' second language use at the first measurement occasion (Hypothesis 2a). In more detail, immigrants were expected to use their second language more in daily life, if they have a higher linguistic adaptability, have more contact to natives, and have a higher motivation for second language use. Furthermore, change in these predictors was also expected to be related to change in second language use over time, more specifically, we expected that each group of predictors was related to change in language shift over time (Hypothesis 2b).

2. Method

2.1 Sample and Procedure

The sample consisted of 229 ethnic German adolescents from the FSU who were part of a larger multidisciplinary research project comprising four annual waves of data gathering, collected from 2002 to 2006. Adolescents were recruited via 54 schools in two western and two eastern federal states of Germany. Those whose parents did not object to their children's

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participation completed self-report questionnaires in school. At follow-up assessments, which were at annual intervals, questionnaires were sent to the postal addresses provided by the adolescents. At each wave of measurement the questionnaires were provided in German with Russian subtitles, and the adolescents received a voucher worth 10 Euro for their participation.

Participants had to fulfill several criteria in order to be included in these analyses. First, because learning a second language when younger than three is considered to be bilingual first language acquisition and might be subject to different processes than second language acquisition (Hamers & Blanc, 2000; Klein, 1987), only adolescents who were at least three years old at immigration were included. Second, only those ethnic German adolescents with Russian as mother tongue were included. Thus, individual differences in German language use should not be attributable to linguistic differences between first and second language. Even if we have no detailed information, it can be assumed that regardless of age at immigration, the adolescents did not speak German in their country of origin and had at best only limited proficiency. In a Russian micro census in 1994, only 0.4 percent of ethnic Germans living in Russia stated that their children were educated in German (Dietz, 1999b). This number is similar among those ethnic Germans who actually migrated to Germany (Meng, 2003). Third, for reliable longitudinal analyses the adolescents needed to have provided enough data, by participating in at least three of the four waves of data collection.¹

In Table 1 an overview of the descriptive statistics of the sample is provided. Of all 229 adolescents who participated at the first wave 153 (67%) were girls and 76 boys. Almost 60% of the sample ($N = 136$) provided data at all four waves of measurement. At the first time point of measurement the adolescents ranged in age from 10 to 21 years, with a mean age of

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16.14 years ($SD = 1.99$). Their length of residence varied between a few months and 14 years ($M_{years} = 6.26$, $SD_{years} = 3.43$), and they were between 3 and 18 years old when they immigrated ($M_{years} = 9.88$, $SD_{years} = 3.99$). All adolescents were born in states of the former Soviet Union. Most came from Kazakhstan (52%, $N = 120$) or Russia (40%, $N = 91$). Concerning the level of parental education, 28% of the adolescents ($N = 64$) reported that their parents held a university degree, and only 6% of the adolescents ($N = 13$) reported that their parents left school without any formal degree. Altogether, 32% of the adolescents ($N = 73$) aspired university degrees for themselves. Almost as many adolescents ($N = 90$, 39%) lived in neighborhoods that were dominated by other ethnic Germans, as lived in neighborhoods that were dominated by native Germans ($N = 103$, 45%).

[Table 1 about here]

Ethnic German adolescents are on average one year older than their native German classmates, because they are often enrolled in grades below their actual level of competency or enter school at higher ages. They also attend schools of non-college tracks more often than natives do, because of their socioeconomic disadvantages. Altogether the adolescents reported to have spent 61% of their life in the FSU, and thus, they were primarily socialized in their countries of origin. This rather large variability due to differences in age at immigration and length of residence can be expected to be related to the extent of German language use and therefore these variables were entered as covariates in our analyses. This allowed us not only to obtain the net effects of our predictor variables, but also to examine whether interindividual differences in German language use are either associated with longer lengths of residence, which would indicate more contact with the German host society, or younger ages at

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immigration, which should be related to easier second language acquisition (critical-period-hypothesis, e.g., Mitchell & Myles, 2004).

2.2 Measures

In the following we first describe the measure for the outcome variable, German language use. Then, the indicators of the group of variables related to linguistic adaptability (language problems, parental education), of contact-related variables (ethnic composition of neighborhood, native peers), and of motivational variables (educational aspirations, Russian self-identification, and orientation towards natives) are introduced.

German language use. German language use was measured by three items adapted from a scale by Mendoza (1989), asking how often the adolescents (a) spoke German with their parents, (b) spoke German with their friends, and (c) how often they read magazines, newspapers, books etc. in German (1 = *never*, 2 = *occasionally*, 3 = *frequently*, 4 = *mostly*, 5 = *always*). Cronbach's α ranged from .70 to .74 for the four time points of measurement. Individuals' mean scores at each time point of measurement were used in the analyses.

Language problems. In order to measure the lack of German language proficiency, a subscale of a multidimensional instrument for the assessment of adolescent acculturation-related hassles was used (Titzmann, Silbereisen, Mesch, & Schmitt-Rodermund, 2011). Participants reported how often in the previous 12 months they had experienced six situations related to not speaking German well, e.g., "I did not understand anything, because my German was too bad", "I could not explain what I wanted to say in German", or "I felt alienated in Germany, because my language abilities are not sufficient". Responses were given on a 5-point Likert scale: 1 = *never*, 2 = *1-2 times*, 3 = *3-5 times*, 4 = *6-10 times*, 5 = *more than 10 times*, higher scores thus indicating more problems with German fluency. The

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scale's internal consistency (Cronbach's α) ranged between .87 and .90 for the different waves of assessment. Individuals' mean scores at each time point of measurement were used in the analyses.

Parental education. The highest educational qualification of each parent was assessed at the first measurement occasion on a 6-point index varying between 0 = *no formal school qualification*, 1 = *basic school qualification*, 2 = *apprenticeship*, 3 = *advanced technical college*, 4 = *university degree*, and 5 = *more than one university degree*. The highest reported educational level achieved by either the father or mother was used in the analyses.

Ethnic composition of neighborhood. Similar to other studies (e.g., Berry, Phinney, Sam, & Vedder, 2006) this was measured by a single indicator asking the adolescents to rate how many of their neighbors were also ethnic Germans. This item was scored using a 5-point Likert scale: 1 = *virtually all are ethnic German*, 2 = *most of them*, 3 = *about half of them*, 4 = *only few of them*, 5 = *virtually none are ethnic German*, but was recoded for analyses so that higher numbers indicated a higher share of ethnic Germans in the neighborhood. As our adolescents come from different schools and different cities, and we asked for their individual perception of their respective neighborhoods, this measure does not reflect the actual composition of their living surroundings, but rather which opportunities the adolescents recognized. For the analyses we used the share of ethnic Germans at the first measurement occasion, as well as subsequent changes during other measurement occasions.

Native peers. Direct contact to native peers was assessed by an indicator of the extent to which native Germans were present in the peer context. Having (a) native friends, (b) a best friend or (c) a romantic partner who was a native German, and having (d) such peers in their clique was each coded as 1 = *native(s)* or 0 = *no native(s)*. The mean scores of the up to four

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items that applied to each individual at each time point of measurement were used in the analyses.

Educational aspirations. The adolescents reported the highest educational qualification they wanted to achieve at each time point of measurement, ranging from lowest possible to highest possible (1 = *no formal school qualification (8th grade)*, 2 = *general secondary school or “Hauptschulabschluss”*, 3 = *intermediate secondary school or “Realschulabschluss”*, 4 = *high school or “Abitur”*, 5 = *advanced technical college*, and 6 = *university*).

Russian self-identification. Self-identification as a Russian was measured at each time point of measurement by asking the adolescents to rate their agreement to the statement “I regard myself as a Russian” on a 6-point Likert scale between 1 (*disagree*) and 6 (*agree*). This item stems from the social identity scale by Doosje, Ellemers, & Spears (1995) assessing the cognitive component of social identity.

Orientation towards natives. This was measured using three items from the Vancouver Index of Acculturation (Ryder, Alden, & Paulhus, 2000) adapted to adolescence. The participants were asked to rate their willingness to have contact with native Germans, such as “I am interested in having native German friends”. Items were rated on a 6-point Likert scale ranging from 1 (*does not apply*) to 6 (*does apply*). Cronbach’s α ranged between .79 and .86 for the different waves of assessment. Individuals’ mean scores at each time point of measurement were used in the analyses.

2.3 Data Analysis

Data were analyzed using hierarchical linear modeling (HLM; Raudenbush, Bryk, & Congdon, 2005), which extends multiple regression analyses to nested data. In longitudinal research, waves of data are regarded to be nested within persons. In the terminology of HLM,

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the Level 1 units of analysis are thus the repeated measures, i.e., change over time, and the Level 2 units of analysis are persons, or, more precisely, differences between persons. This procedure has the advantage of allowing for variation in the number, timing, and spacing of measurement occasions across participants (Hox, 2000). Another advantage of HLM is the possibility to include time-varying as well as time-independent predictors (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). Time-independent predictors are variables defined to be stable between measurements, such as the level of parental education, and are entered at the second (person) level. Time-varying predictors, such as contact to native peers, however, may themselves change over time, and are thus included at the first level of analyses. Time-independent predictors, therefore, are expected to be related to change in language use by determining the steepness of slope parameters; whereas changes in time-varying predictors are expected to be directly related to change in second language use from one time point to another.

Level 1: The Level 1 or within-person equations specify the outcome variable in relation to time as well as to predictor variables that vary over time. The basic time parameter (linear slope) was defined to indicate the wave of measurement: 0 for the first, 1 for the second, 2 for the third, and 3 for the final measurement occasion. For ease of interpretation, time-varying predictors were calculated as the difference of a later measurement occasion compared to the first measurement occasion (time-1 centering, Singer & Willett, 2003). The coefficients of time-varying covariates thus show whether their change over time is related to higher or lower levels of German language use at later waves.

Level 2: In the Level 2 or between-person equations the interindividual differences in language use at the first measurement occasion and the interindividual differences in rates of

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change, as identified in Level 1, are used as outcomes. We expected those interindividual differences to be related to our predictor variables. In order to keep the coefficients meaningful, we centered the variables on the overall sample mean. The only exception was gender, which was coded as 0 for boys and 1 for girls. Thus, the intercept for models including gender and other predictor variables shows the boys' average use of German at the first measurement occasion assuming an average level on the other predictor variables. The gender variable indicated difference between girls and boys' language use.

3. Results

3.1 Change in Second Language Use (Language Shift)

We tested first whether increase in German language use indeed showed a decelerated increase, i.e., showing a steeper increase earlier than later over time (Hypothesis 1). Therefore, we applied a series of growth models with ascending polynomials, and tested whether adding growth terms and variances improved model fit (i.e., the added parameters reduced the Deviance score significantly in χ^2 -tests).² Starting with an intercept only model, which just allowed for an overall mean varying between persons, as well as a residual variance indicating unexplained within-person variation over time, we then added growth components, i.e., first a linear growth term, then a quadratic, and so on. The coefficients of these parameters were first entered as "fixed", i.e., assuming to be the same for all adolescents, and only in the next step allowed to vary between persons (random coefficient). We included length of residence, age at immigration, and gender as covariates in all models. Hypothesis 1 would be supported by a best fitting model with a significant positive linear slope parameter and an additional negative quadratic time parameter (steeper increase earlier and deceleration later on).

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The deviance of the intercept only model with three parameters ($no.parameters = 3$) was 1528.73. The intraclass correlation of .80 indicated that 20 percent of the overall variance was on Level-1 (within persons over time), which seemed sufficient to continue with further analyses. After controlling for differences in German language use between the adolescents due to length of residence, age at immigration and gender ($\chi^2(3) = 146.54, p < .001$), allowing for linear change in German language use over time improved model fit, $\chi^2(1) = 37.91, p < .001$. The extent of change over time significantly varied between the adolescents, $\chi^2(2) = 21.75, p < .001$, but did not depend on the covariates, $\chi^2(3) = 0.78, p = .85$. Adding the quadratic term as a fixed parameter further improved model fit, $\chi^2(1) = 10.59, p < .004$, but neither allowing it to vary between adolescents or to depend on the covariates, nor adding a cubic time parameter were further improvements ($\chi^2(3) = 9.99, p = .019, \chi^2(3) = 2.69, p = .44$, and $\chi^2(1) = 7.43, p = .006$, respectively).

Hence, the best fitting model for change over time included a random linear time trend as well as a fixed quadratic component with length of residence, age at immigration and gender as covariates. This model (Model 1 in Table 2) was used as baseline for further analyses. According to Model 1 the daily use of the German language increased over time ($\beta_{10} = 0.18, p < .001$). Furthermore, the negative coefficient of the fixed quadratic trend indicated a deceleration in the increase of German language use over time, which did not differ between adolescents ($\beta_{20} = -0.04, p < .01$). The average trajectory over time thus resembled a “learning curve”, showing steeper increases earlier than later, as was expected according to Hypothesis 1. Of the covariates, only age at immigration was related to differences between adolescents in the extent German was used at the first time point of measurement: Those who were younger when they immigrated used more German ($\beta_{02} = -0.14, p < .001$), indicating that

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language shift within the three years of adolescence that were covered in our study started at lower levels of German language use for those with older ages at immigration and at higher levels for those who were younger when immigrating, while length of residence did not explain differences in language shift.. Furthermore, as was evident by a negative correlation of intercept and linear trend ($r = -.28, p < .05$), those who started with higher levels of German language use showed on average smaller increases in German language use.

[Table 2 about here]

3.2 Predictors of Language Shift

In order to test our Hypotheses 2a and 2b, which stated that higher linguistic adaptability, more contact and more motivation would each be associated with higher levels and larger increases of German language use, we first entered the predictors for each group of variables separately into the best fitting growth model (Model 1 in Table 2). In Model 2-A, the predictor variables of linguistic adaptability are included, in Model 2-C the predictor variables for contact, and in Model 2-M the motivational variables. In a last model all predictor variables were added simultaneously in order to check which effects of the Models 2 (-A,-C, -M) hold when taking into account the other groups of predictors (see Model 3, Table 2).

Model 2-A, including language problems and parental education as indicators of linguistic adaptability, was not significantly better than the change model (Model 1), $\chi^2(4) = 10.26, p = .036$, although a higher extent of German language problems at the first measurement occasion was significantly related to a lower level of German language use at the first measurement occasion (intercept; $\beta_{04} = -0.14, p < .01$). The residual variance of the intercept was reduced only by 5 percent from 0.374 to 0.356 (Model 1 to Model 2-A in Table

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2). The residual variance within the individuals over time or the residual variance of the linear time trend was not reduced.

Adding the variables indicative of contact (Model 2-C, Table 2) significantly improved model fit, $\chi^2(5) = 58.21, p < .001$. More natives in the peer network were associated with more daily use of German at wave 1, $\beta_{07} = 0.72, p < .001$, just as subsequent increases in contact to native peers were associated with increases in German language use over time, $\beta_{50} = 0.43, p < .001$. The composition of the neighborhood, however, was neither related to level nor rate of change in German language use. The inter-individual variance in the intercept was reduced by 19%. Concerning change over time, the inter-individual variance in the linear trend was reduced by 10%, and the residual variance was affected by about 1%.

Adding the motivational predictor variables (Model 2-M) also improved model fit significantly, $\chi^2(6) = 108.82, p < .001$. Less self-identification as Russian was related to a higher intercept of German language use, as was a higher orientation towards natives, $\beta_{09} = -0.07, p < .01$ and $\beta_{010} = 0.15, p < .001$, respectively. Furthermore, decreases in Russian self-identification and increases in the orientation towards natives were connected to more German language use over time, $\beta_{70} = -0.04, p < .01$ and $\beta_{80} = 0.06, p < .01$. Educational aspirations were neither related to level nor change in German language use. The variance in the intercept was reduced by 24% by the motivational predictor variables, the residual variance within individuals by 4%, and the residual variance of the linear slope was not reduced.

In the final model (Model 3), which included all predictor variables simultaneously, none of the significant relations in Models 2 (-A,-C,-M) was reduced to insignificance, indicating that all of these relations hold independently of each other. Most of the coefficients

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even did not change much in size. In sum, only variables of contact and of motivation added significantly to the explanation of interindividual differences in language shift.

German language problems were significantly related to lower levels of German language use. But only variables related to contact (direct contact to native peers) and to motivation (Russian self-identification and orientation towards natives) were associated with the starting level of German language use and change in German language use over time. Thus, neither Hypothesis 2a (referring to interindividual differences in the level of German language use at the first measurement occasion) nor Hypothesis 2b (referring to longitudinal associations) was supported by our data, as language shift was predicted by only two of the variable groups.

4. Discussion

The aim of this study was twofold. First, we examined language shift within a sample of adolescent first generation immigrants from a longitudinal perspective, thus being able to investigate whether adolescent first generation immigrants increased in their use of the second language over time. Second, we tested whether variables from each of the three groups of predictors, (a) linguistic adaptability, (b) contact, and (c) motivation, were relevant for language shift. These groups of variables were derived from theories on second language acquisition and acculturation.

4.1 Change in Second Language Use (Language Shift)

On average, German language use was found to show decelerated increase over time, as expected according to Hypothesis 1, with changes being more pronounced earlier than later, resembling a “learning curve” pattern. We thus were able to confirm former cross-sectional research results on immigrant adults in the U.S.A., which found that English language use

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was related to the natural logarithm of length of residence, suggesting that changes occur most rapidly soon after immigration (Stevens, 1992). The adolescents in our sample who had an average length of residence of a little more than six years reported that they used German “frequently” at the first measurement occasion, increasing significantly over the time period of three years covered in this study, with steeper increases earlier and deceleration later on. This indicates that acculturation models for sociocultural adaptation of immigrants (e.g., Ward, 2001) can be adequately used to predict language shift within one generation. But, as expected by the three generation model of Veltman (1983), a full shift to German did, on average, not occur. Our sample of first generation adolescent immigrants predominantly maintained their mother tongue, with the average of second language use leveling off and not reaching the measurement point of using German “mostly”. However, there were remarkable differences between the adolescents, some starting at very low levels, others already quite high, which partly reflected the differences in age at immigration and length of residence in our sample. In general, language shift over time was more pronounced for those starting at low levels of German language use, indicating that over time increases in the fit between individual and society can be observed.

4.2 Predictors of Language Shift

We based our expectations for predictors of differences in language shift between adolescents on various theoretical frameworks related to second language acquisition and acculturation of immigrants, which converged on three groups of predictors as relevant, namely linguistic adaptability, contact, and motivation. Our results indicate that, contrary to our expectations which assumed that all three groups of predictors would be related to level and rate of change of German language use (Hypothesis 2a & 2b), only variables related to

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contact and motivational variables were significantly associated with differences between adolescents in their extent of German language use at the first measurement occasion and to subsequent increases over time.

The only association within the predictor group of linguistic adaptability was a small negative relationship between German language problems and German language use at the first measurement occasion, which was, however, not strong enough to improve the overall model fit. This indicates that linguistic adaptability may not play an equal role in all phases of acculturation, but is most related to second language use in the period soon after migration. Especially in the early phase variables related to linguistic adaptability might be most influential, because the presence of second language problems might pose a barrier to the use of the second language. The subsequent reduction of language problems, once sufficient ability is achieved, might not necessarily enhance further second language use. This finding also is in line with Gardner (2006) who expects that “ability would play less of a role in informal contexts [...] because motivation would determine whether or not the individual even takes part in the informal contexts” (p. 242). However, linguistic adaptability in terms of perceived competence was a stronger predictor of second language use outside the classroom than contact and motivation for Anglophone students taking introductory courses in conversational French in a bilingual Canadian community (MacIntyre & Charos, 1996). Thus, future research should test whether variables related to linguistic adaptability are related to language shift only among recent immigrants, or if a model of language shift could be based solely on variables indicative of contact and of motivation.

Despite the substantial time period of, on average, six years that the adolescents had already spent in Germany, we still found increases in German language use over time, which

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differed between adolescents, and could be predicted by variables related to contact and motivation. Not all the variables not all variables used in this study, from these two groups, predicted differences between adolescents' language shift. When an association was found, however, it was related to both differences between adolescents in German language use at the first measurement occasion and to subsequent increases over time. Thus, for immigrant ethnic German adolescents having a higher share of native peers, identifying less as being Russian, and having a higher orientation towards natives, seemed to be especially crucial in shifting one's language towards the use of German soon after immigration as well as later on. In contact linguistics, the importance of social networks for change in language use is well noted (Stoessel, 2002; Wei, 1996). Our results extend this theoretical concept by showing that direct contact is more important than the rather abstract opportunities that are offered in the neighborhood context. Probably the higher quality of contact that was implied in the direct contact measure we used (e.g., assessing the ethnicity of the best friend) plays a decisive role in this regard (Pettigrew, 1998). Furthermore, motivational variables are at least as important as direct contact. In particular, our results suggest that for immigrants, integrative motivational variables, such as less self-identification with the culture of origin and a higher orientation towards the receiving society, seem more important than an instrumental motivation (educational aspirations). This again is in line with Gardner's (2006) assumption that a second language learner's motivation is fed by integrativeness and attitudes toward the learning situation rather than instrumentality. We could show that this applies not only to formal classroom settings of second language acquisition, but that adolescent first generation immigrants seem to use German more in daily life not because they want to gain something by it, but rather out of a sense of belonging.

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Age at immigration was the only covariate that was significantly associated with language shift, even when taking length of residence into account. Those who were younger when they arrived had higher levels of German language use. This is not surprising, considering that a younger age at immigration is associated with a higher cognitive capacity for learning second languages (critical-period-hypothesis, e.g., Mitchell & Myles, 2004). Also, those who came at younger ages were socialized more in the new country and thus were exposed to two rather than one culture: the heritage culture represented by their parents and the receiving culture represented by educational institutions (Oppedal, 2006). Our findings thus hold for explaining differences between adolescents in second language use regardless of differences associated with age at immigration.

4.3 Strengths and Limitations

Among the strengths of our study is the well defined and reasonably sized sample covering a time span of three years in adolescence with four annual measurement occasions. Despite the fact that this time span could have been longer, longitudinal studies that follow immigrants for several years are rare, and as the adolescents' lengths of residence varied, we had actually information on a much larger time frame. The downside of our sample is that findings cannot be generalized to all immigrant populations. Ethnic Germans with Russian mother tongue form a special group of diaspora migrants that differs from other migrant groups in several ways, such as having ancestral German roots and being accepted as legal German citizens upon arrival in Germany, as well as, on average, having quite high levels of education. Still, this study is relevant as diaspora migration happens in substantial numbers happens not only in Germany, but also, for instance, in Israel, Finland, and Greece (Münz & Ohliger, 1998).

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Although the data are longitudinal, no strong inferences about the direction of effects can be drawn. The design was correlational and causal inferences are limited, as there was no experimental variation of predictor variables. There are competing theoretical approaches, for instance, concerning the direction of influence between identity and behavior. On the one hand, it is often assumed that in situations where identity and behavior are perceived as incongruent, behavior will be adjusted to match the identity (Stryker & Burke, 2000). On the other hand, if one is forced to behave in a way that opposes one's identity, this may lead to changes in identity (Haarmann, 1996). Both mechanisms and subsequently bidirectional effects may be considered as underlying our multivariate correlational results, but we have at least two reasons to believe that the ethnic German adolescents adjust their behavior, i.e., their use of the second language, to their identity. First, the situations relevant for the use of German covered in this study are situations where the adolescents are rather free to choose their language, and second, self-identification proved to be of relevance independent of direct contact to native peers who might exert normative pressure.

Furthermore, we examined whether the three groups of predictor variables were related to language shift independently of each other. Former research sometimes proposed path models, suggesting, for example, that ability and attitudes drive contact to second language speakers, which in turn would be related to second language use (e.g., Masgoret & Gardner, 1999). Others again suggested that contact would enhance self-confidence using the second language, which in turn would be related to differences in identity (e.g., Noels & Clément, 1996). The aim of our study was not on the interrelations of our predictor variables over time and the testing of various moderation and mediation models was beyond the scope of this study. However, our results suggest that variables related to linguistic adaptability probably

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are more influential in the earlier stages of acculturation, because for our sample with an average length of residence of about six years, only an association of the starting level of German language problems and German language use was found, while contact and motivation were relevant for language shift independently of each other over time. We do not know however, whether variables related to linguistic adaptability enhance contact and motivation, which would be an objective for future research.

Another limitation is that, based on using archival data, our measures were not directly designed for examining language shift. Although we chose only variables which were known to be related to second language use from other studies or based on theoretical underpinnings, future research should try to focus on more direct operationalizations, especially of linguistic adaptability. Parental education, for example, was included in this study as a variable related to linguistic adaptability based on several results with economic migrants which found that higher parental or own education was related to more second language use (e.g., Chiswick, 1998; Grenier, 1984; Hurtado & Vega, 2004; Stevens, 1992). However, in our study we did not find an association of education and second language use, which is in line with other research on diaspora migrants from the former Soviet Union to Germany or Israel (Mesch, 2003; Nauck, 2001). Thus, in this group of immigrants education might indeed not capture linguistic adaptability, because, whereas for economic migrants educational qualifications and second language use might be linked via cognitive skills, for diaspora migrants from the former Soviet Union there might be additional factors related to higher levels of education, such as valuing Russian as a language of education and culture. For example, regarding the world's most influential languages Russian scores higher than German (Weber, 1999).

4.4 Conclusions

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Taken together, our findings show that there is language shift within first generation adolescent immigrants with regard to increases in second language use over time. On average, ethnic German adolescent immigrants used more German (instead of Russian) in everyday situations over time. Variables related to contact and interaction with the native population, and to the motivation to use the second language, proved to be of relevance for differences between the adolescents' language shift. Seen against this backdrop, providing opportunities for contact with natives and nurturing positive perceptions of the receiving society and its culture could probably enhance language shift, even if immigrants have been in the receiving country for substantial periods of time. Drawing on the current debate on the effectiveness of integration courses for immigrants in Germany, and whether these courses should be made mandatory, our results suggest that being provided with the opportunity to learn the second language in a classroom setting with other immigrants probably does not enhance the integration of immigrants in terms of second language use substantially. Nevertheless, a basic level of ability is probably necessary to set the stage for language shift to occur. The results on our sample of adolescent immigrants, who already possessed this level of skills as they were enrolled in regular German schools, however, point out that other factors, namely motivation and contact, are more relevant throughout the process of acculturation. Hence, for language shift in immigrants, positive contact to native Germans and an inter-group climate that fosters the immigrants' integrative motivation, i.e., their wish and feeling to belong to the German society, should be advanced. This could be achieved, for example, by bringing immigrants and natives together on a one to one basis in terms of "tandems" (Calvert, 1999; Putzlar, 2010), which aim at learning more of each others culture while the immigrant practices German in a positive setting in which his cultural background is valued. A recent

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study comparing Turkish migrants in several receiving countries also suggests that rather than resulting from assimilative pressure on immigrants, paradoxically language shift is more prevalent in countries with a supportive attitude towards maintenance of ethnic group norms and values (Yagmur & van de Vijver, 2011).”

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Footnotes

¹ The ethnic German adolescents included in this study did not differ from those who were excluded due to longitudinal sample attrition except for one of the variables of interest at baseline. Adolescents who dropped out had a significantly lower mean level of their educational aspirations ($M = 4.17$, $SD = 1.30$), compared to those who participated at least in three of the four waves of measurement ($M = 4.63$, $SD = 1.26$), $F(1,640) = 19.44$, $p \leq .001$.

² As there is no statistical test of the fit of a single model, we followed the established procedure of comparing twelve models in ascending complexity using χ^2 -difference tests of the deviance scores provided for each model (Hox, 2002). We adjusted the alpha significance level at .004 according to the common Bonferroni-procedure, as χ^2 -tests are very sensitive to sample size and we wanted to avoid overly frequent rejections of the null hypothesis.

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Table 1

Descriptive Statistics

Variable	Wave 1		Wave 2		Wave 3		Wave 4	
	<i>(N = 229)</i>		<i>(N = 205)</i>		<i>(N = 216)</i>		<i>(N = 173)</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Dependent Variable								
German language use	3.16	0.94	3.35	0.89	3.38	0.91	3.47	0.89
Factors related to Ability								
Language problems	2.07	1.07	1.84	1.05	1.66	0.86	1.51	0.74
Parental education	2.61	1.30	-	-	-	-	-	-
Factors related to Contact								
Neighborhood composition	2.97	1.35	2.79	1.40	2.67	1.31	2.66	1.32
Native peers	.38	0.36	.43	0.35	.48	0.33	.46	0.33
Factors related to Motivation								
Educational aspirations	4.63	1.26	4.64	1.21	4.66	1.22	4.83	1.16
Russian self-identification	3.96	1.84	3.65	1.95	3.56	1.98	3.45	1.97
Orientation towards natives	3.86	1.56	4.04	1.51	4.13	1.40	4.38	1.44

Note. All adolescents participated at the first wave and either two or three of the following waves of data collection. Parental education is time-independent, and therefore only assessed at Wave 1.

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Table 2

Hierarchical Linear Models for German Language Use Trajectories

	Model 1	Model 2-A (Linguistic Adaptability)	Model 2-C (Contact)	Model 2-M (Motivation)	Model 3
Level 1					
β_{00} – Intercept	3.15***	3.13***	3.10***	3.16***	3.12**
β_{10} – Linear Slope	0.18***	0.18***	0.15**	0.15**	0.12**
β_{20} – Quadratic Slope	-0.04**	-0.04**	-0.04**	-0.04**	-0.03*
β_{30} – Δ_t Language Problems		-0.02			-0.01
β_{40} – Δ_t Neighborhood Composition			-0.01		-0.01
β_{50} – Δ_t Native Peers			0.43***		0.35**
β_{60} – Δ_t Educational aspirations				0.03	0.03
β_{70} – Δ_t Russian Self-identification				-0.04**	-0.03**
β_{80} – Δ_t Orientation towards Natives				0.06**	0.05**

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Level 2 - Intercept

β_{01} - Length of residence	0.02	0.00	0.04	0.02	0.02
β_{02} - Age at immigration	-0.14***	-0.13***	-0.09***	-0.13***	-0.10**
β_{03} - Gender	0.04	0.07	0.11	0.02	0.08
β_{04} - Language problems W1		-0.14**			-0.08*
β_{05} - Parental education		0.00			-0.02
β_{06} - Neighborhood composition W1			-0.05		-0.02
β_{07} - Native peers W1			0.72***		0.40**
β_{08} - Educational aspirations W1				0.02	0.01
β_{09} - Russian self-identification W1				-0.07**	-0.06**
β_{010} - Orientation towards natives W1				0.15***	0.11**

Level 2 - Linear Slope

β_{11} - Length of residence	0.00	0.00	0.00	0.00	0.00
β_{12} - Age at immigration	0.00	0.01	0.00	0.00	0.00
β_{13} - Gender	0.02	0.02	0.03	0.03	0.04

This is an accepted manuscript. For the published version please see:

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β_{14} - Parental education		-0.01			-0.01
β_{15} - Neighborhood composition W1			0.01		0.01
Residual variances					
<i>For intercept β_{00}</i>	0.374***	0.356***	0.303***	0.283***	0.259**
<i>For linear change β_{10}</i>	0.020***	0.020***	0.018***	0.020***	0.018**
<i>Within individual e_{it}</i>	0.124***	0.124***	0.123***	0.119***	0.118**
Fit					
<i>Deviance</i>	1311.16	1300.90	1252.95	1202.34	1168.35
<i>(No. of Parameters)</i>	(13)	(17)	(18)	(19)	(28)

Notes. Unstandardized regression coefficients are shown. W1 = assessed at wave 1. * $p < .05$, ** $p < .01$, *** $p < .001$. Model 1 refers to the model that described change over time best, including length of residence, age at immigration and gender as covariates. Model 2-A adds explanatory variables of level and rate of change in German language use of variables related to linguistic adaptability, Model 2-C includes explanatory variables related to contact, Model 2-M includes explanatory variables related to motivation, and Model 3 includes all explanatory variables.

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